

SECRET

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SWPA
MALARIA ?

VOL 1, NO 5

ED MALARIA CONTROL, APO 503

15 April 1944

The following observations are extracted from the March 1st 1944 report of Ensign Louis J. Carleo, USNR Entomologist.

I. Observations and investigations of four important points of Survey.

1. Anopheles of local fauna --- Two species of Anopheles are present in this area. Punctulatus, variety (mollucensis), is the more prevalent species, both in larval and adult forms. Anopheles p. punctulatus has been collected for the first time in this area and some information as to it's larval and adult habits have been recorded. Both species are dangerous vectors of malaria. The former is well distributed over the entire area.

2. Anopheles p. mollucensis was the only species collected from this area in January. In February collections, the species, Anopheles p. punctulatus has been added. These two species exhibit very similar habits in all forms. Both larvae have been collected in natural and artificial breeding areas. Anopheles p. mollucensis has been collected from natural areas such as, swamps, clear stagnant streams, and brakish water. The presence of algae, floatage, and thick debris, are the most noticeable factors found. Besides desiring full sunlight, this species seems to prefer artificial areas as, bomb craters, foxholes, wheel ruts and pot holes. These areas contain floatage and algae, and are of both clear and turbid water.

3. Of the 112 specimens collected, only 2 female Anopheles p. punctulatus and 3 male Anopheles p. mollucensis were obtained. The balance were female mollucensis. The females of the latter species is the more prevalent. Both species, however, seem to select the identical day-time resting places. Hammocks, both opened and closed, yielded the majority of mosquitoes. In one collection as high as nine engorged female Anopheles have been collected in one hammock. Most of the collections were made in the mornings. The average number per collection for the month of February was 3.6 as compared to January number of 1.4. No specimens have been collected in natural resting places, such as hollow trees. All adult collecting stations are located in areas where troops are bivouaced, and in the vicinity of breeding areas. Anopheles p. mollucensis occurs in sufficient numbers and distribution, to consider this a highly malarious area. Anopheles p. mollucensis could be stated without doubt, to be androphilic due to the fact that more than ninety percent of the total number of this species collected, were taken from, both opened and closed, jungle hammocks and nets. These mosquitoes were found to be fully engorged.

4. To determine the percentage of female Anopheles found infected in nature, dissections are being continued. Last month, forty Anopheles were dissected and none were found to have oocysts on the stomach wall. This negative result was due, wholly, to dissecting the mosquitoes when collected fully engorged. During the month of February, all fully engorged females were kept in captivity, as long as possible, in order that the blood meals would be digested before dissection was carried out. Of the one hundred and nine females collected, ninety seven were examined for presence of oocysts on the stomach walls, after having been kept caged for three to eight days. Of the ninety seven females examined, eight were found to have oocysts on the midgut, which constitutes eight and two tenths percent (8.2%). Anopheles were dissected when blood meals were digested and when noticeable signs of death were observed. Four of these dying specimens were found to have oocysts present. No sporozoite infections were found. Captain Darlington and Lieutenant La Casse, of the 26th Malaria Survey Unit, have confirmed the first two positive results obtained. It is believed that, if all engorged females be kept alive for at least a week, a larger percentage would have been found to be infected.

5. A blood survey taken on one hundred marines, out of an infantry company, showed that eleven harbored gametocytes, or eleven percent. Another survey on native women, men children, and babies, showed that seventeen out of forty positive smears harbored gametocytes, or forty two and five tenths percent (42.5%). The above report from Cape Gloucester.

II. Preliminary Anopheline Survey of Iboko, New Britian.

1. On February twenty-sixth, three larval collections were made to determine the prevalent species in regard to the expected malaria problem in this area. The coastal area is dry, and somewhat higher, than the area extending inland. Approximately one hundred yards from the shore, which is low and swampy with scattered bomb craters throughout is an area which is covered with grass, algae, floatage, widely distributed cocoanut trees and palms. Water in several sections seemed to have the appearance of pollution with human excreta and decaying vegetation, coconuts and husks, which produce dense algeous growth on the surface. A portion of the dry creek bed, approximately thirty feet in length has collected seepage water and empties slowly into the sea. This water possessed the odor of sulphite salts and is full of vegetation, leaves and debris and is fully shaded.

2. Larval collections were made in each of the above three types of areas. In the natural swampy areas, pot holes full of grass and floatage necessitated muddying of the water in order to obtain larvae. No comparative data could be derived from this method employed. Seven *Anopheles p. mollucensis*, two *Anopheles p. punctulatus* and first instar larvae were collected. Out of thirty dips in bomb craters, four *Anopheles p. mollucensis*, one *Anopheles p. punctulatus* and five first and second instar larvae were taken. All polluted areas yielded only *Aedes* and *Culex* larvae. In the portion of the creek bed containing water, seven *Anopheles p. mollucensis* larvae were collected in fifteen dips.

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It is interesting to note the increasing topical value of malaria control, mosquitoes and the disease in current newsprints, magazines and novels. Obviously, the environmental conditions exemplified in the many theatres of combat has aroused public interest and consideration. Certainly we can assume that the average citizen is more cognizant of malaria and it's effects.

A Book-of-the-Month Club selection and national bestseller, Colonel Effingham's Raid by Berry Fleming has been bought for the movies by Twentieth-Century Fox Films. It received excellent reviews and criticisms; among the most stimulating was the editorial which appeared in the Detroit News.

A humorous allegorical piece on the mosquito problem in Panama manages to blend into the story without a ripple of disturbance. Our hero of the book (also known as Cousin Willy) is applying for a position with a local newspaper in his home town to which he has retired after a long Army career. The following episode is quoted:

"My people are soldiers," Cousin Willy went on. "My great-grand-father fell at the gates of Mexico City. I was at Santiago; I was wounded at the beginning of the action at San Juan Hill. I was at the Siege of Panama."

"Siege of Panama?" said Mr. Hoats, digging frantically into his high school history books on what appeared to be the warm trail of fraud.

"For fifty years, Mr. Editor," Cousin Willy continued, "the forces of civilization, the brigades of progress, had been held at bay on the Isthmus, unable to advance into the jungle, unable to join the waters of the two great oceans. And do you know what blocked them? Gatling guns? Minnie balls, grape, canister? Superior forces? Guerrilla bands?" Cousin Willy shook his head. Then he lifted his stick and lowered it at Mr. Hoats's

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flattening chest in somewhat the manner of Custer on the Big Horn; when the ferrule dropped to about the bottom of Mr. Hoats's left lung. Cousin Willy said, 'Mosquitoes!'

"Mr. Hoats didn't jump, but he did bat his eye. 'Perhaps one of my boys could fix up a little story for Sunday,' he began placatingly.

"Anopheles maculipennis,' specified Cousin Willy, disdaining the offer. 'Stegomyia fasciata. For half a century this enemy, less than a quarter of an inch in stature, had blocked the economic march of a nation of a hundred million people.--It was insupportable.'

"Colonel,' began Mr. Hoats, catching sight of Dewey beyond the glass of the door.

"We laid a siege on them,' said Cousin Willy. He clasped the stick behind his back and continued, as though talking to a class of junior officers at the Army War College. 'There are two great alternate methods of dislodging a fortified enemy: you may, one, force upon him what he does not want, or two, you may deny him what he does want. You may, one, propel at him various substances unfriendly to his well-being, such as gas, fire, bits of metal, edged steel; or you may prevent his receiving various substances essential to his well-being, such as water, provisions, heat, oxygen. The particular tactical problem involved here, due to the highly specialized nature of the enemy, his size, his cover, his guerrilla methods, eliminated the first alternative. So we chose the second. We blockaded General Stegomyia; we cut him off from reinforcements, from essential war materials. We hammered his communications. We attacked his mobilization points by draining them; we sprayed his concentrations with oil; we screened his wells, we planted Fifth Columns of fish in the waters to attack his reservists and his ammunition dumps.--As you know, he abandoned his position with heavy losses and the American forces moved in --!"

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The following is an extract from the report of the 10th MCU on the breeding of A. punctulatus in artificial containers in the Lae area.

a. Anopheles Moluccensis were found breeding in mutilated bitumen drums by this unit. This is the first of this type breeding found at this base in such containers. Numerous Culicenes were found breeding in the same dump.

b. The majority of breeding located by this unit has been in artificial containers. Those natural breeding places that are visible are being controlled and the hidden ones are being constantly searched for and controlled.

c. Three empty drum dumps were located, each breeding prolifically. Most of the containers were mutilated and thereby collected rain water. A regular dumping area has been established for non-salvageable and non-servicable containers away from any troops and these containers will be moved in the near future so as not to be a constant menace to troops.

Add note from the report of the 24th MSU covering the same period and also from the Lae area.

With the drop in Anopheles more emphasis has been placed on pest mosquitoes and numbers of larvae have been found in stagnant and polluted pools, ruts, accumulations of tin cans, abandoned tar paper and unused "jungle juice" barrels. A great number of these have been Aedes Scutellaris and their elimination has resulted in a drop in dengue as noted in recent figures on dengue rates.

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Extracted from 29 FEB 1944 Monthly Progress Report - Health A.S.F. - W.D.

MALARIA

A year ago, at the conclusion of the Buna-Gona campaign, the admission rate for diagnosed malaria was in the neighborhood of 400 for the entire Southwest Pacific theatre, and 950 in New Guinea. Allowance for undiagnosed malaria would raise the rates even higher. A year later, with several times as many troops concentrated in New Guinea, the theatre rates are but a third to a fourth of their previous level, and the New Guinea rates an even smaller fraction, during the season when conditions favor the spread of the disease. Apparently the very heavy transmission which occurred a year ago sustained the malaria rate largely through frequent relapses on the part of men infected in New Guinea and in the South Pacific. With New Guinea now a base area, however, a vigorous anti-malarial program has evidently succeeded in reducing the rate of original infection even in this highly epidemic area.

In the South Pacific the sequence of events has been quite similar. On Guadalcanal, where U.S. troops originally suffered heavily from malaria, the disease has been brought sufficiently well under control to warrant consideration of the discontinuance of suppressive atabrine. The effectiveness of the current malaria control program, and the tightness of malaria discipline in the South Pacific, are illustrated by the recent report that the 37th Division experienced only 27 cases of malaria during November in the Bougainville campaign. The exceptionally high admission rates during the middle of 1943 are attributed in large part to the attempt to demalarialize the American Division and the 147th Infantry Regiment by taking them off suppressive atabrine (see HEALTH for 31 December 1943). When these units are excluded the rates are halved during this peak period.

Although definitive reports are not yet available, it seems plain that real progress has been made in the direction of effective control. An offensives move northward into less malarious or even malaria-free areas, the hazard may seem slight. However, active campaigns in the Philippines and in China and Burma will probably again expose U.S. troops to the ravages of the disease under conditions which will require unremitting vigilance on the part of all personnel if a reasonable degree of control is to be assured. In view of all that has been learned from the South and Southwest Pacific experience there is no need again to suffer the high rates of morbidity and noneffectiveness which obtained in these areas a year ago.

MEDICAL ASPECTS OF THE ITALIAN CAMPAIGN.

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Prior to the campaign it was known that malaria would be one of the chief problems confronting the Fifth Army at the time of invasion. The landing was to be made in malarious coastal lands and at a time when the local incidence of malaria was at or near the seasonal peak. The coastal plain south of Salerno is an area of high malaria endemicity, and here Fifth Army troops met some of the stiffest fighting of the invasion. During the first two or three weeks most of the troops were thoroughly exposed to infection, and little could be done to control breeding areas during this period, but malaria control units arrived on D+12 and were equipped on D+19. Suppressives atabrine was employed, however, and atabrine discipline is said to have been satisfactory. Individual measures, including repellents, nets, and gloves, were not used too effectively, although the repellents were highly effective when used. Two of the divisions had come from Sicily, where there was considerable malaria, but the rate of admission was only 66 per thousand per year during the first week. For the next three weeks the rate increased rapidly, reaching a peak of 382 during the week ending 8 October. By 31 December, however, it was down to 38 admissions per 1000 men per year. Most of the malaria was caused by plasmodium vivax. Experience in other theatres has shown that this type of malaria carries a high relapse rate, so that malaria may well continue to contribute to the noneffective rate even though transmission has ceased.

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All malaria information in this theater is considered "secret" but a good deal of information relative to malaria control has been revealed from Guadalcanal. To quote Newsweek of Dec 20, 1943:

"Malaria: The worst spot in the Solomons for malaria is still Guadalcanal. Real efforts have been made in malaria control, but with heavy rains and tremendous movement of vehicles and troops there are naturally collections of water, and the mosquitoes are not kept down by a long shot. Atabrine is proving successful and usually the malaria will not break through unless one gets terribly overtired or is weakened by some other sickness. It is interesting to note that a heavy bout of drinking can almost always bring on an attack of malaria if one has had it in the past. New Georgia is relatively free of malaria, as is Vella Lavella."

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Lt. Colonel W. V. King, Sn. C. (entomologist) has been boarded for return to U.S. by a mainland hospital. We regret that this trouble has laid him low and wish mightily for his complete recovery.

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The following figures are from the annual (1943) statistical report.

1. Admission rates-

a. Forward areas-

- 1) Battle casualties - 24 per 1,000
- 2) Malaria - 247 " "
- 3) Fever, undiagnosed - 275 " "

b. Rear areas-

- 1) Battle casualties - 11 " "
- 2) Malaria - 244 " "
- 3) Fever, undiagnosed - 71 " "

(How many of the "Fever, undiagnosed" become malaria cases is not known.)

2. Days of hospitalization-

a. Forward areas- 7.1 days for ea case malaria.

b. Rear areas - 15.26 " " " " "

(longer period due to concurrent treatment of anemias, malnutrition, etc.)

3. In addition to the first hospital admission for malaria, each case will have 1.7 more admissions for relapses from this primary (admission for re-infection not considered), or a total of 2.7 admissions for each "new" infection (with its relapses) during the subsequent 12 months period.

4. In the twelve months period following the first hospital admission for a case of malaria, the man will lose one (1) day out of every ten (10) days due to morbidity (actually in hospital) due to relapses from the "initial" attack. Mortality rate -- 1 death. The one out of every ten days lost is figured for the twelve months beginning with the onset of the first hospital admission.

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The following information about DDT Geserol is quoted from the Newsweek "Battle Baby" of Feb 28th 1944, page 31 Medicine "War Against Lice"

"A third pest weapon described by the War Department is a powder, DDT, an extremely powerful insecticide which is sprinkled on the clothing. A single dusting of DDT will give protection from disease-carrying vermin for a month. DDT (dichloro-diphenyl-trichloro-ethane) has proved so effective that the Army recently flew the first 500-pound cargo produced at a duPont pilot plant to an overseas front."

Note the amount and the fact of its being a pilot plant. Even after production begins in quantity we have been informed that there will not be sufficient quantity for mosquito larval control until July 1944. Then the material must be shipped and distributed within the theater.

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Locations of the malaria control and survey units will probably be of interest to all.

Survey

4th (AF) Captain Ralph F. Honess, Parasitologist, C.O.; 1st Lt. Robert M. Hawkins, Entomologist; Captain Melvin Dorward*, Entomologist. Now at Gusap.

5th (Army) Captain Owen Graham, Entomologist, C.O.; 1st Lt. Malcolm Ferguson, Parasitologist; 2nd Lt. Vincent Gallagher*, Parasitologist. Now at Saidor.

6th (Army) Major Thomas A. Hart, Parasitologist, C.O.; 1st Lt. John Gardner; 1st Lt. Basil G. Markos*, Entomologist. Now at Goodenough.

17th (SOS) Captain William H. Horsfall, Entomologist, C.O.; Captain Dale Porter, Parasitologist; 2nd Lt. James Forbes*, Parasitologist. Now at Oro Bay.

24th (SOS) Captain E. E. Shields, Entomologist, C.O.; Captain George Graham, Parasitologist; 2nd Lt. Harry M. Smith*, Entomologist. Now at Lae.

26th (Army) Captain Philip Darlington, Entomologist, C.O.; 1st Lt. Walter Licasse, Parasitologist; 1st Lt. James T. Griffiths*, Entomologist. Now at Cape Gloucester.

27th (Army) Now at Finschhafen. (Personnel unknown.)

28th (Army) 1st Lt. Harry S. Brown, Entomologist, C.O.; 2nd Lt. Alan W. Donaldson, Parasitologist. Admiralty.

29th (Army) 2nd Lt. Arthur S. Kidwell, Entomologist, C.O.; 2nd Lt. William R. Vance, Parasitologist. Staging at Milne Bay.

30th (AF) Captain Carl O. Mohr, Entomologist, C.O.; 2nd Lt. Robert B. Burrows, Parasitologist. Staging at Milne Bay.

31st (AF) 1st Lt. Wayne L. Howe, Entomologist, C.O.; 2nd Lt. Malcolm K. Dulaney, Parasitologist. Staging at Milne Bay.

32nd (AF) Captain Karl V. Krombein, Entomologist, C.O.; 2nd Lt. Howard A. Bern, Parasitologist; 2nd Lt. Merle F. Hanse*, Parasitologist. Staging at Milne Bay. To Nadzab.

37th (SOS) 1st Lt. Carl G. Kadner, C.O.; 2nd Lt. Walter W. Abramitis. Finschhafen.

39th (SOS) Now at Finschhafen. (Personnel unknown.)

40th (SOS) Captain Deane P. Furman, Entomologist, C.O.; 2nd Lt. Herman E. Marholin, Parasitologist; 2nd Lt. Walter L. Barksdale*, Parasitologist. Finschhafen.

41st (SOS) 1st Lt. Charles H. Daniels, Entomologist, C.O.; 2nd Lt. James N. Starling, Parasitologist. Now at Milne Bay.

Control

4th (SOS) Captain Clarence M. Robinson, C.O.; Captain Henry C. Mitchell*. Now at Milne Bay.

5th (Army) Captain Richard E. Reinke, C.O.; 1st Lt. Sidney M. Marks*. Now at Cape Gloucester. To Finschhafen.

6th (AF) Captain James O. Bennett, C.O. Now at Gusap.

7th (Army) Captain Huron Vaughan, C.O. Now at Finschhafen.

8th (SOS) Captain William H. Hardy, C.O. Now at Oro Bay.

9th (SOS) Captain Herbert B. Foster, C.O. Now at Finschhafen.

10th (SOS) Captain Henry E. Jones, C.O. Now at Lae.

11th (AF) 1st Lt. Frank E. Jones, C.O.; Captain Rudolph E. Eberle*. Now at Nadzab.

12th (Army) Captain Charles Lose III, C.O. Now at Goodenough.

13th (AF) Captain Richard E. King, C.O. Now at Finschhafen.

14th (AF) Captain William D. Bryan, C.O. Now at Debudura.

15th (Army) Captain John L. Brown, C.O. Now at Saidor.

Control (Con't)

52nd (Army) Captain Homer W. Jorgensen, C.O. Admiraltys.
 53rd (Army) Captain David D. Morey, C.O. Now at Finschhafen.
 54th (Army) 1st Lt. Daniel A. Ohun, C.O. Staging Milne Bay. To Goodenough.
 55th (Army) 1st Lt. Kerwin L. Mick, C.O. Staging Milne Bay. To Goodenough.
 56th (Army) Captain Benn H. Leland, C.O. Now at Finschhafen.
 58th (SOS) Captain Jas. A. Sampson, C.O. Now at Cro Bay.
 59th (AF) Captain David P. Clifford, C.O. Now at Cape Gloucester.
 60th (AF) Captain George W. Hicks, C.O. Now at Saidor.
 61st (AF) Captain Wilbourn H. Kittrell, C.O. Staging Milne Bay. To Finschhafen.
 62nd (AF) Captain Emil F. Vogt, C.O. Staging Milne Bay. To Finshhafen.
 63rd (AF) 1st Lt. Jack D. Whelchel, C.O. Now at Milne Bay. To stage Nadzab.
 64th (SOS) 1st Lt. John W. Lapsley, C.O. Now at Milne Bay.
 67th (SOS) Captain Elmer R. Cross, C.O. Now at Milne Bay.
 68th (SOS) Captain James P. Slater, C.O. Now at Milne Bay.
 69th (SOS) Captain Roy F. Dunn, C.O. Now at Milne Bay.

Names followed with an (*) are excess personnel.

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Location of units in S.P.A. as of December 1943.

- (1) Bora Bora -- 41st Control
- (2) New Hebrides --
 - Santo -- 39th Control
 - Efati -- 2nd Survey, 2nd Control
- (3) Guadal --

| <u>Survey</u> | <u>Control</u> | <u>San.Co.</u> |
|---------------|----------------|----------------|
| 15th | 24th | 702nd |
| 20th | 25th | 704th |
| 22nd | 35th | 716th |
| 25th | 38th | |
| 33rd | 40th | |
| | 65th | |
- (4) Munda --
 - 21st Survey
 - 34th Control
- (5) Bougainville --

| <u>Survey</u> | <u>Control</u> | <u>San.Co.</u> |
|---------------|----------------|----------------|
| 1st | 1st | 718th |
| 3rd | 3rd | |
| 23rd | 36th | |
| | 37th | |

(NOTE: 35th Control, now on Manus Island)

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Savings in hospital beds by Malaria Control Measures, Atabrine, Personal protection and Environmental control. These figures from Statistical Section, Office of the Chief Surgeon, Hq USASOS.

I. Malaria Hospitalization:

| <u>% of total hospital population</u> | <u>Malaria</u> | <u>F U O</u> |
|---------------------------------------|----------------|--------------|
| 1st Quarter, 1943 | 27% | 10% |
| 2nd Quarter, 1943 | 28% | 7% |
| 3rd Quarter, 1943 | 24% | 5% |
| 4th Quarter, 1943 | 12% | 7% |
| January 1944 | 8.5% | 6% |

II. Morbidity Prevalence:

A. In February 1943, 23 men of every 1,000 men of the command, were sick every day with malaria; 7 men of every 1,000 with F.U.O.

B. In January 1944, 3 men of every 1,000 men of the command, were sick with malaria; 2 men with F.U.O.

III. Hospital Beds Occupied:

The peak February 1943 number of hospital beds occupied for malaria and 75% of the F.U.O.'s (3,986), gives a hospital non-effective rate of 34.5 men per 1,000 men of the command sick with malaria or F.U.O. (3.45%). If the same hospital non-effective rate prevailed in January 1944, 10,732 hospital beds would be occupied by malaria or F.U.O. patients, instead of the 1,544 beds actually occupied in January 1944. This represents a saving of 9,188 hospital beds due to the decrease in admission rates for malaria and F.U.O.

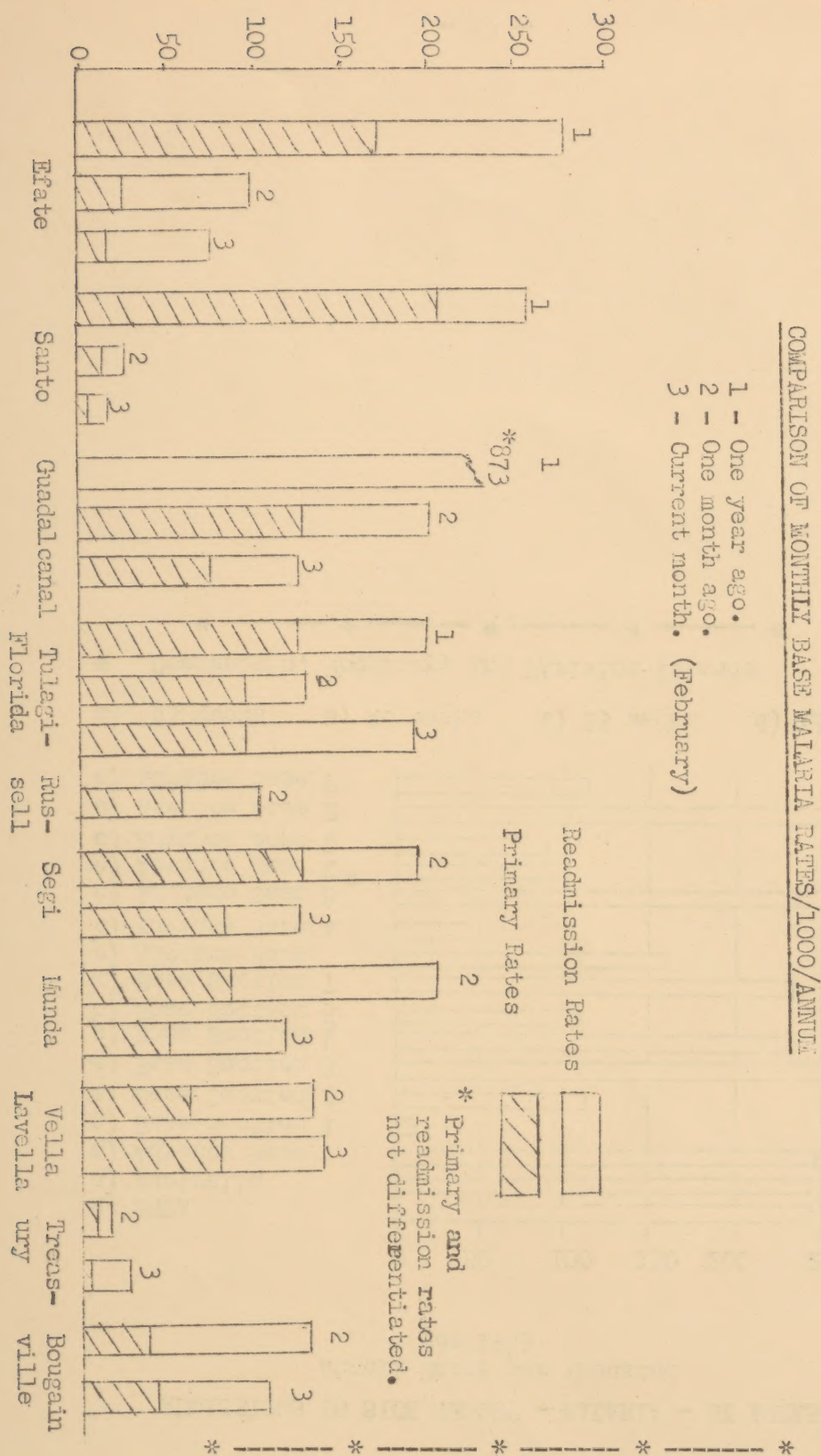
(NOTE: 75% of F.U.O. cases are considered as being malaria cases.)

attack per 1000 men
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 MALARIA RATES, March 1944, for the weeks ending:

| | USASOS | Sixth Army | 5th Air Force
Malariologist | Base | 14th AA |
|-----------------------------|---------|------------|--------------------------------|---------|---------|
| Milne Bay | | | | | |
| 4 March | 15 | 4 | 0 | | |
| 11 | 31 | 4 | 26 | | |
| 18 | 15 | 0 | 0 | | |
| 25 | 36 | 3 | 19 | | |
| 31 | 20 | | | | |
| Oro Bay - Dobodura | | | | | |
| 4 March | 89 | 95 | 113 | 69 | |
| 11 | 118 | 260 | 16 | 73 | |
| 18 | 28 | 97 | 17 | 169 | |
| 25 | 62 | 138 | | 67 | |
| 31 | 44 | 28 | | 16 | |
| Port Moresby | | | | | |
| 4 March | 24 | 51 | 16 | 33 | 0 |
| 11 | 6 | 0 | 42 | 65 | 0 |
| 18 | 13 | 0 | 31 | 36 | 0 |
| 25 | 21 | 49 | | 54 | 0 |
| 31 | 27 | 49 | | 34 | 194 |
| Finschhafen | | | | | |
| 4 March | 62 | 96 | 57 | | 156 |
| 11 | No rate | No rate | 35 | | No rate |
| 18 | 39 | 152 | 46.2 | | 27 |
| 25 | 44 | 21 | 35 | | 15 |
| 31 | 32 | 46 | 23 | | 0 |
| Lae | | | | | |
| 4 March | 77 | | 255 | | |
| 11 | 43 | | 153 | | |
| 18 | 61 | | 0 | | |
| 25 | 59 | | 76 | | |
| 31 | 111 | | 0 | | |
| 5th AF Malariologist Report | | | Goodenough - 6th Army | | |
| March | 4 | 11 | 18 | 4 March | 12 |
| Saidor | 210 | 96 | 40 | 11 | 10 |
| Nadzab | 91 | 122 | 53 | 18 | 14 |
| Gusap | 156 | 144 | 67 | 25 | 12 |

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The following chart and article are taken from the Navy Newsletter of March 1944.



Mite Repellents.

Tests on relative value of phthalates (liquid repellent) and DDT (insecticide or louse powder) are from notes of the Combined Advisory Committee on tropical Medicine, Hygiene, and Sanitation, Southwest Pacific. Phthalates were applied by rubbing the fluid by hand very thinly on shirts, trousers, and socks. DDT was applied in solution with kerosene and petrol or as a powder. Results are given in Table II.

TABLE II
Mite Repellent Effect of Phthalates and DDT

| | Amount per
Set of Clothes | Number of
Washings | Duration of Pro-
tection in Days |
|--------------------|------------------------------|-----------------------|-------------------------------------|
| Dimethyl phthalate | 20 c.c. | 0 | 5-7 days |
| Dibutyl phthalate | 30 c.c. | 8 | 21 days |
| DDT | 5 gms. | 2 | 7 days |
| DDT | 18 gms. | 3 | 18 days |

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The use of phthalate preparations in above quantities for impregnating clothing would require increase in present repellent allowance. In practice it is not necessary that all of clothing be impregnated. The impregnation of socks, lower trouser legs, fly and waist of trousers; fly, collar, and cuffs of shirts is considered adequate and will reduce the use of repellent to about one-fourth the amounts listed in Table II. The repellent known as 612 is effective, but stands washing poorly and must be reapplied.

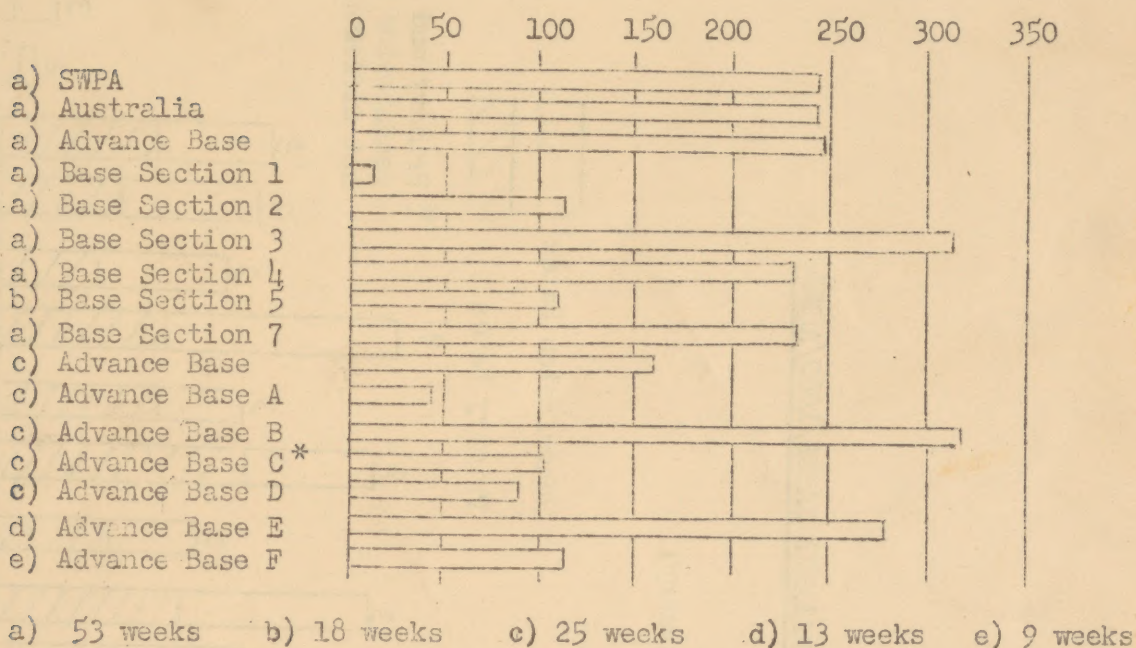
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The 58th MCV under the command of Capt. Sampson, Sn. C. arrived at Base "B" on 24th March very eager to work. They set up at once and started working with a "bang". From all observations it seems the 58th is "on the ball" and will soon make a name for themselves.

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ADMISSIONS TO SICK REPORT - MALARIA - BY AREAS

Annual Rates per Thousand
for 1943



* Goodenough, Woodlark, And Kiriwina Islands

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